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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6: **H04M 1/00, 1/65, 3/50** | **A2**

(11) International Publication Number: **WO 98/35485**

(43) International Publication Date: 13 August 1998 (13.08.98)

(21) International Application Number: PCT/SE98/00202

(22) International Filing Date: 5 February 1998 (05.02.98)

(30) Priority Data:
9700458-4 11 February 1997 (11.02.97) SE

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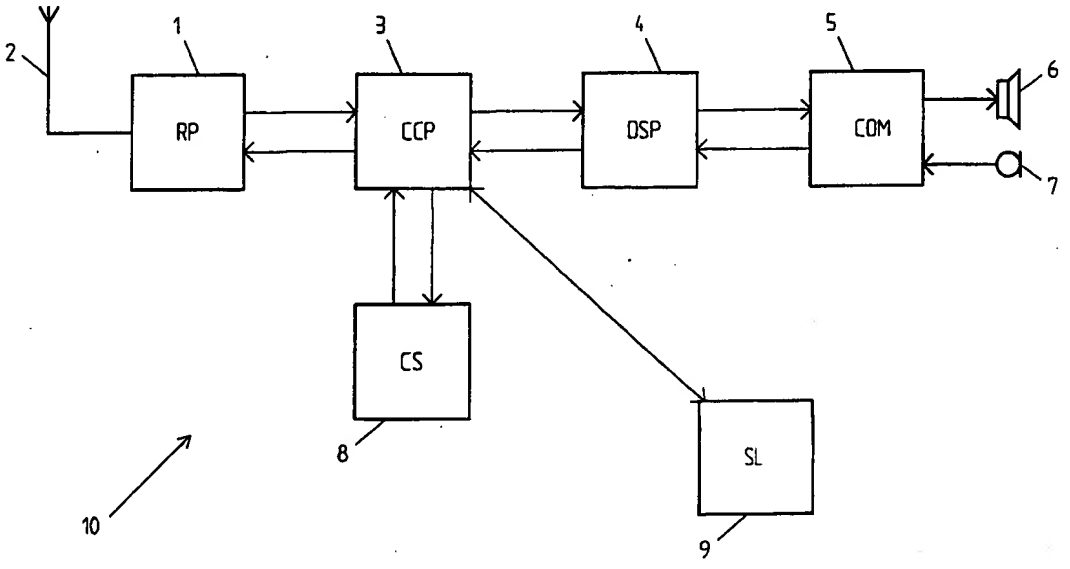
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
Without international search report and to be republished upon receipt of that report.

(54) Title: A MOBILE TELECOMMUNICATIONS UNIT AND SYSTEM AND A METHOD RELATING THERETO



(57) Abstract

The present invention relates to a mobile telecommunications unit (10) and to a mobile telecommunications system. Storing means (9) are provided in the telecommunications unit(s) or in the telecommunications system for storing message information to be sent e.g. from one subscriber to another subscriber. Means are also provided for keeping address information of the receiver and event information for activation of the transmission to the relevant address at occurence of the relevant event. The invention also relates to a method for sending a message from a first mobile telecommunications unit wherein the message is stored in separate storing means either in the first mobile unit or in the network and wherein the message is sent to the given destination at occurrence of a given event.

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Title:

A MOBILE TELECOMMUNICATIONS UNIT AND SYSTEM AND A METHOD RELATING THERETO.

FIELD OF THE INVENTION

The present invention relates to a mobile teleommunications unit which comprises storing means for storing message information e.g. input via microphone means and means for transmitting said message to another telecommunications unit. The invention also relates to a method for sending a message from a first mobile telecommunications unit to a second telecommunications unit wherein the message is stored in the first telecommunications unit or in the telecommunications system.

STATE OF THE ART

Various telephone answering machines are known. In that case the message information is stored in storing means connected to or in a telecommunications unit on the side of the called subscriber, i.e. the receiver of the message. Generally telephone answering machines are separate items connected to a fixed telephone which item comprises recording means for simply recording the message received from a calling part and they may for example be activated when the called subscriber does not answer the telephone after a given number of signals or after a certain time has elapsed. It is also known to include the telephone answering functionality in a fixed telephone so that an incoming message is stored in the telecommunications unit on the receiving side. Messages can also be recorded in said separate item or in the storing means of the fixed telephone itself so that when the subscriber who is called does not want to answer the telephone or is not available for the

moment, the recorded message is first replayed whereafter the calling subscriber may leave a message which thus also is recorded.

So called voice mail systems are also known.
GB-A-2270443 shows an automatic telephone message sending apparatus. This document discloses an apparatus that either may comprise a stand-alone unit or comprise part of a conventional telephone unit in which messages can be recorded and stored which are sent at a predetermined time to a predetermined telephone number.

However, answering machines etc. generally use electromechanical storage means. Such are bulky and complex which as such make them in principle unusable for mobile telecommunications units since one of the main prerequisites for such mobile units is that they are small, light and not bulky so that the user without any problem can carry them under almost any circumstance.

Thus, up to now, most mobile telecommunications units have no message storing capability at all and if messages are stored somewhere, the storing and delivery is operator controlled. This may have as the result that a user who is trying to contact or who wants to leave a message to, a called person has to try to reach the person over and over again.

A number of attempts have been done to provide mobile telephones with message storing capability but up to now no satisfactory solution has been found.

SUMMARY OF THE INVENTION

A problem that the user of a mobile telecommunications unit, such as e.g. a cellular telephone or a cordless telephone, may encounter is for example the case when the user wants to send a message to a person who for the moment cannot be reached. If the user of the mobile telecommunications unit then for example is unable to make the telephone call later or after given time when the message has to be delivered, it may even be impossible for the user to deliver the message. There are many situations when a user of a mobile communications unit needs to deliver an audio message but does not have access to the cellular or cordless telephone when the message should/could be delivered, i.e. the user may be prevented from using the mobile telephone for some reason, e.g. important meetings etc, or since the obstacle is on the receiving side, the user might not know when it is possible to deliver the message.

What is needed is therefore a mobile telecommunications unit as well as a mobile telecommunications system using which messages can be delivered or received substantially at any time or when it is possible/convenient and that the user does not have to be available at the time of delivery/reception of the messages.

What is needed is also a mobile telecommunications unit and a mobile telecommunications system including such units wherein the units are light and easy to handle, not bulky etc.

Therefore a mobile telecommunications unit is provided which comprises a radio part with receiving and transmitting means, control means including microprocessing means, signal processing means and message storing means for storing at least input message information. It also comprises storing means for storing address

information for the destination of said message information and for storing information about time/event for activation of the transmission of the message information and logic means for retrieving the stored message information and for activation of the transmission of the message information at said time/event. There are a number of different examples of events of which only a few will be mentioned herein. One example relates to the case when the called telecommunications unit is busy. The user (the caller) may then for example set as an event that the called subscriber makes off hook, i.e. when the telecommunications unit is no longer busy. Another example relates to the case when a called subscriber does not answer; the user may e.g. not be at home, at work etc. The relevant event can then be taken to be when the called subscriber has returned and made a first call (or call attempt). The message can then be delivered right after that call has been ended. Still another alternative is if a mobile unit is called which is not on. As soon as it is switched on, this is detected and the message is delivered. The mobile telecommunications unit comprises conventional storing means for example a RAM-storage which is in communication with the control means and particularly the message storing means are separate from said conventional storing means. The destination address information may be stored either in the conventional storing means or in said message storing means. Also the time/event information can be stored either in the conventional storing means or in the separate message storing means in alternative embodiments. Information relating to various events can of course be stored.

In a most advantageous embodiment the separate message storing means and/or the logic means are comprised in a module which is connected to or arranged in the telecommunications unit. The module may for example be arranged in the telecommunications unit

at the fabrication stage or it may be arranged/connected at the option of the user. Particularly it may be detachably arranged in the mobile telecommunications unit so that the user may add it and/or remove it depending on if a user wants to have access to this particular functionality or not. This is particularly advantageous since this particular feature as well as a number of other features as such make the mobile telecommunications unit more complex and more expensive and all users do not use all functionalities so for a user who for example does not want to pay for such a functionality, because he does not believe that he really will use it or he finds it too expensive, may choose a mobile telecommunications unit which does not include this functionality. Furthermore, if a user for example finds out that such a functionality would be attractive, he can buy a module including this functionality which then is connected to, or arranged in, the telephone. According to alternative embodiments the connection may be done by the user himself or it may be done by the vendor.

In an advantageous embodiment the mobile telecommunications unit comprises a cellular mobile telephone. In a particularly advantageous embodiment also information incoming from the receiving means can be stored in the storing means, i.e. information from another telecommunications unit or the destination telecommunications unit. Alternatively separate storing means are used for storing said incoming information. Particularly an activation link is established between the mobile telecommunications unit delivering at least one message and one or more destination telecommunications units. Particularly the mobile telecommunication unit comprises recording means and input audio information is stored as audio files. In another embodiment message information can be typed in, for example via a keyboard

arranged on the mobile telecommunications unit and the message information is stored as text files in the storing means. Alternatively audio information may be converted into text files so that the storing is done for text files. It should however be noted that the message also in such an embodiment is transmitted as audio information.

Still further, advantageously the message information is compressed using data compressing facilities and algorithms which as such already are provided in a mobile telecommunications unit in connection to the storing means, thus increasing the storing capability.

In an advantageous embodiment the module comprising at least message storing means also comprises voice recognition means and a memory bank of pre-recorded audio words. In an alternative embodiment in which the message storing means and the logic are not provided in a separate module, may of course also voice recognition means and a memory bank be provided. In both embodiments advantageously the audio conversation between the mobile telecommunications unit and a destination telecommunications unit is stored so that a user can listen to the "artificial" conversation between two telecommunications units afterwards whenever the user wants to do so.

In another advantageous embodiment which can be applied to all of the embodiments referred to above and to all embodiments to be referred to hereinafter, one and the same message can be sent to more than one destination telecommunications unit or different messages can be stored for different destination telecommunication units or of course also for the one and the same destination telecommunication unit. The event and or/time settings can of

course also be the same or different. Thus one message can for example be sent to a number of addresses substantially at the same time as well as different messages can be sent to different destinations at different times or also at different times and/or events to one and the same destination. Any combination is in principle possible.

In a different embodiment the separate storing means are not provided in the telecommunications unit but in the telecommunications system itself, the telecommunications unit in other aspects having the functionality as described above.

Therefore is also a mobile telecommunications system provided which comprises a number of mobile telecommunication units which comprise means for storing message information or which communicate with message storing means arranged in the telecommunications system. Each of the telecommunication units is of a kind as described above and messages are stored on the originating side, i.e. messages are recorded and stored on the originating side and transmitted to a destination telecommunications unit when the user of the originating telecommunication units desires and information about the address of a destination telecommunications unit i.e. the address, generally a telephone number, is stored as well as the time when the message is to be transmitted or the event that the user on the originating side wants to activate the transmission. Alternatively the message information is stored in the system in e.g. separate storing means. E.g. a so called voice mail box can be used for this purpose.

Advantageously the message storing means are comprised in loose modules, for example audio voice control modules and the message

information may alternatively be stored as a voice or as a text file. In an advantageous embodiment this is also optional for the user, i.e. he can store a message either in the form voice or can type in the message and store it as a text file as discussed under reference to the telecommunication units above.

However, the system also includes the possibility when only the originating telecommunications unit, i.e. the unit in which a message is stored, comprises said functionality and it is not dependent on the receiving mobile telecommunications unit having the same functionality. Of course the receiver does not have to be a mobile telephone but it can also be a fixed telephone or a cordless telephone etc. As discussed with reference to the mobile telecommunications units, one or more telecommunication units of the system may also comprise voice recognition means etc. The functionality may in an alternative embodiment be included in a cordless telephone, e.g. of the DECT-system.

A method is therefore also provided for sending a message from a first mobile telecommunications unit to a second telecommunication unit which comprises the steps of storing the message in separate storing means in the first mobile telecommunications unit or in storing means in the telecommunication system, storing the address to which the message is to be delivered, setting the time or indicating the event when the message is to be delivered, and automatically transmitting the message to the at least one given address at the preset time or at occurrence of the relevant event.

Advantageously the method also includes the step of receiving reply messages from the second telecommunications unit and storing

said reply messages in the separate storing means in the telecommunications unit or in the system.

Advantageously the separate storing means are comprised in a module being detachably connected to the first telecommunications unit. According to different embodiments the address information and/or the event/time information is stored in the separate storing means for message information or in conventional or additional storing means in the first telecommunications unit. Still further, according to different embodiments the message information is stored as an audio file or as a text file. In an alternative advantageous embodiment, the method furthermore comprises the steps of storing pre-recorded audio words in separate storing means, analysing the pre-recorded audio words in processing means of the first telecommunications unit, in the destination telecommunications unit detecting the delivery address where to send a reply, performing a conversation using said pre-recorded audio words between the first and the second telecommunications unit and storing said conversation between the first and the second telecommunications unit so that the user can listen to the "artifical" conversation between the first and the second telecommunications unit whenever he likes. The method advantageously also comprises a step of transmitting a message to more than one destination telecommunications unit and still further storing a number of different messages to the same or to different telecommunications units so that they are sent to the respective addresses if there are more than one destination telecommunications unit. The method further includes the step of establishing a communication link between the first and the at least one second telecommunication units.

It is an advantage of the invention that the user of a mobile telecommunications unit such as a cellular telephone or a cordless telephone always can send a message to another telecommunications unit from his mobile telephone irrespectively of whether the user in practice is prevented from making a call when he wants the message to be delivered and whichever is the situation on the destination side; i.e. whether the user is busy, has not activated his telephone etc. as discussed above.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will in the following be further described in a non-limiting way with reference to the accompanying drawings in which:

FIG 1 is a block diagram of a cellular telephone with a loose module,

FIG 2 shows a cellular telecommunications system with telecommunication units having message delivering funcationality,

FIG 3 is a flow diagram illustrating delivery of a message from a telecommunications unit,

FIG 4 is a flow diagram illustrating one way of storing and delivering a message,

Fig 5 is a flow diagram showing an alternative way of delivering of messages, and

FIG 6 is a flow diagram illustrating two-way delivery of messages/reply information.

DETAILED DESCRIPTION OF THE INVENTION

Fig 1 is a schematical block diagram of a conventional cellular telephone with a radio part (RP) 1 which in a manner known per se includes receiving and transmitting means for receiving and transmitting radio signals and to which an antenna 2 is connected.

The transmitting means and the receiving means share the antenna 2 in time multiplex. The radio part 1 includes means and circuitry for modulating, demodulating and equalizing in a manner known per se. The radio part 1 is connected to and communicates with the control part (CCP) 3 comprising a microprocessor. The control part 3 controls the cellular telephone and converts the structure of the cellular telephone. The cellular telephone may for example be a GSM (Groupe Speciale Mobile) telephone. In alternative embodiments it may in principle be any cellular telephone. Other examples are a cellular telephone of the DCS system, of the PCS (Personal Communication System) system, PDC (Pacific Digital Communications), ADC (American Digital Communications), (D)-AMPS (Digital Advanced Mobile Phone System) etc. but it may also be a cordless telephone e.g. a DECT (Digital European Cordless Telephony) telephone. The control part 3 in turn is connected to signal processing means, a digital signal processor (DSP) 4 which is connected to the communication part (COM) 5. The signal processing means 4 among others includes (also in a manner known per se) means for digitizing an incoming signal, channel encoding/decoding means. The communication means 5 among others includes coding/encoding means receiving speech data from and sending speech data to a microphone 7 and a loudspeaker 6 respectively and to the microprocessor of control part 3. The functioning of the cellular telephone as such will not be further described herein since it is known per se and different access techniques may be used such as time division multiple access (TDMA), code divison multiple access (CDMA) or frequency division multiple access (FDMA) also in a manner known per se. The control part 3 is connected to separate storing means which here comprises a separate module (SL) 9 for storing message information and logic means 9 with logic circuity for handling at least the message information.

In a particular embodiment audio messages are stored in the module 9 which can be arranged in the cellular (or cordless) telephone. According to one embodiment the module is arranged in the telephone at the fabrication stage. Alternatively it is a loose module that can be connected to the telephone by the user. Thus it is an option for the user to include the functionality of storing and delivering messages which is an advantage since some users may not find it necessary to include, and pay for, such a functionality.

The separate storing module advantageously comprises a RAM and a ROM or a flash memory. Of course the separate storing means for message information does not have to be contained in a separate module but it can also be arranged as a separate memory in some other way in the telephone.

In an advantageous embodiment the stored message information, particularly the stored audio data, is compressed. This can be done in a way that is suitable for the particular telecommunications unit, e.g. depending on its internal data structure. Generally most mobile telephones, e.g. cellular telephones, comprise a speech encoder for compressing/ decompressing speech. Thus the functionality of the cellular telephone that already is provided, independently of any message delivery funcationality, is used. As an example, if the GSM system is used, an RPE-LTP (Residual Pulse Excited-Long Term Prediction) coding algorithm is used to provide a compressed data rate. The RPE-LTP algorithm is for example described in GSM Recommendation 6.10, "GSM Full Rate Speach Transcoding". This is incorporated herein by reference. The encoding/coding means are advantageously conventional means used in cellular telecommunication units for

compression of speech received from microphone 7 for simultaneous transmission via the antenna 2 or to decompress speech data received over the air interface via the antenna 2 to be output via the speaker 6. Advantageously the encoding/coding means are designed and programmed for the application of conventional compression/decompression algorithms as discussed above. The encoding/decoding means, in a particular embodiment, may be used also to compress message information which is to be stored in the separate storing means 9 or to decompress voice messages to be output from the separate storing means 9.

The Conventional Storing means (CS) 8 of the cellular telephone is for example a conventional RAM memory.

The functioning according to a first embodiment will now be described. This is also schematically illustrated in the flow diagram of Fig 3. It is here supposed that a first subscriber, or a user, here denoted subscriber A, has a message that he wants to deliver to a second subscriber or a user, in the following denoted subscriber B. In the following the reference "A" is taken to mean either subscriber (user) A or the telecommunication unit of subscriber A. The same applies for B, C and D. It is here in principle irrelevant whether the telecommunications unit of subscriber B, in the following denoted telecommunication unit B or simply B, see Fig 3, comprises the functionality of message delivering as described in the present invention and that is included in telecommunication unit A.

The telecommunications unit A is activated or turn on, 101, in a conventional manner. In this case it is supposed that subscriber A wants to deliver a message to subscriber B and that subscriber A is able to make a phone call. He then calls B, 102. At this time

subscriber B may be available or not, 103. In case B is available, the call is connected in a conventional manner 103A. However, if B is not available, telecommunication unit A may for example via a display unit or via audio means ask the user A if he wants to deliver a message, 104. This is however an optional feature; it may also be sufficient that subscriber A notes that B is not available and then inputs the message. Alternatively there may be a voice indication asking subscriber A if he wants to deliver a message or not. If he does not want to deliver a message, the connection is simply released in a conventional manner 104A.

If however subscriber A wants to deliver a message, he (according to one embodiment) talks in the message through recording it via recording means in subscriber unit A, 105, and the message is then stored in the separate storing means 9 for storing the message, 106. As referred to in Fig 1 the separate message storing means may be comprised in a separate module that is arranged in the mobile telecommunication unit A. The module may for example comprise a separate box or a circuit board that is connected to the telephone or arranged in the telephone. In an alternative embodiment however the separate storing means are otherwise provided for in the telecommunications unit. The subscriber A then sets a time or an event at which the message is to delivered to subscriber B, i.e. to the telecommunications unit B, 108. He also gives the address of telecommunications unit B, i.e. the telephone number of subscriber B or of telecommunications unit B. This is illustrated through step 107 in Fig 3. The order for giving address information and setting time can be as illustrated in the figure or it can be the other way round. Alternatively can the message information be given last.

In this case it is only illustrated that there is one message to be delivered to one telecommunication unit or subscriber. Of course a number of messages can be stored in the separate storing means 9 as well as a number of different times/events, i.e. events on the destination side activating the transmission, and telephone numbers can be stored in the telecommunication units A. According to alternative embodiments the address information, i.e. the telephone number(s) and the event(s)/time(s) for activating the delivery are stored in the conventional storing means of the telecommunication unit or they are stored in the separate storing means 9. Alternatively the address information is stored in one storing means, the separate storing means or the conventional storing means and the event/time information is stored in the other storing means. The setting of the time and/or event for delivery may for example be an alarm or a clock that activates the transmission, 109. Thus, at the preset time, or at occurrence of the relevant event, the message is automatically transmitted to telecommunication unit B, 110.

As referred to above this functionality in no way pre-supposes that telecommunication unit B includes the corresponding functionality. However, if telecommunication unit B does include the corresponding functionality, and when an activation link has been established between telecommunication units A and B respectively, subscriber B or the telecommunication unit B may return a reply to telecommunication unit A which message then may be stored in the separate storing means 9. Also, even if the telecommunication unit B does not include this functionality, and if the message from A to B is transmitted when subscriber B is available, he may return a reply to subscriber A which then is stored in the separate storing means 9 and which can be replayed to subscriber A whenever he wants.

Fig 4 illustrates a second embodiment in which an alternative way of storing is used. This is particularly advantageous since a storing capacity is provided through which more and/or longer messages can be stored. In this case it is supposed that the telecommunication unit as such is known per se. Thus, if a telecommunication unit is activated or started up, 201, a user who wants to deliver a message inputs an audio message, 202. Using voice recognition means, the audio message is converted into a text file, 203. In the separate storing means, the message information is then stored as a text file, 204. Then the address and event/time information is input and stored for example as described above, 205. Here the message information is first stored whereafter the address and event/time information is stored. Of course it can also be the other way around i.e. the address and the event/time information is stored before the actual message information is stored. The invention is not restricted to any particular way of doing this. Via the event, an alarm or a clock message delivery is activated, 206, and the message information stored as text is converted to audio information, 207, and the audio signal is automatically transmitted, 208.

In Fig 5 still another embodiment is illustrated which also presupposes the use of voice recognition means. The telecommunication unit is then started/activated in any appropriate way as discussed above, 301. In this case however, the message to be delivered is typed in, 302, e.g. via a keyboard (or the conventional keyboard) on the telecommunication unit itself or via separate means, 302. The message information is then stored as a text file, 303, as described with reference to Fig 4. Then address information (telephone number), event/time information is input and stored, 304. Also here, of course, the order of storing

message information etc. does not matter. At the present time (for example) message delivery activation occurs, 305, and the text information is converted to audio information, 306, and the audio signal is automatically transmitted, 307, to the relevant address. Advantageously a number of different events are stored or the procedure at different events and transmission atuomatically takes place at the occurence of the relevant event.

In the flow diagram of Fig 6 an embodiment is illustrated in which also voice recognition means are used and which pre-supposes that both the telecommunication unit on the originating side, i.e. the telecommunication unit from which a (first) message is to be delivered, and the destination telecommunication unit, i.e. the telecommunication unit being the intended receiver of the message comprise such. Also in this case the originating telecommunication unit is denoted A and the destination telecommunication unit is denoted B. It is pre-supposed that both include the functionality of delivering a message according to the present invention and for example described under reference to Fig 1 and to Fig 3. In the separate storing means of telecommunication unit A and telecommunication unit B memory banks of pre-recorded audio words are contained.

According to this embodiment an audio conversion can be performed between the telecommunication units A and B without any persons being actually involved. Afterwards, when a user so desires, he can listen to and understand the conversation between the two telecommunication units since the conversation as such has been recorded and stored in the separate storing means, advantageously separate storing means comprised in a module.

Now the flow of such a conversation will be illustrated. First is the first telecommunication unit, A, initiated or started in a manner known per se, 401. Then the user of telecommunication unit A inputs a message which either is recorded or typed in as described in the foregoing. In this case it is supposed that the message includes a request for information. As discussed earlier the address of the telecommunication unit B is input, e.g. the telephone number and the time/event is set as discussed in the foregoing, 403. In one embodiment different alternatives are made available or indicated to the user relating to events on the destination side that can be selected for activating transmission. Alternatively, certain events automatically produce activation when they occur, such as off hook, inactivated phone is activated, first call (attempt) etc. if the user, when first attempting to send a message, presses a key or similar indicating that the message should be delivered later on.

It is then determined whether the requested information is available in telecommunication unit, 404. If the requested information is available in telecommunication unit B or directly available to B, the information is given to telecommunication unit A, 404A. If however the requested information is not available, or the subscriber B does not have access to the information at the time the conversation is established, telecommunication unit B asks through transmitting a message of prestored information to telecommunication unit A where to deliver the message when the requested information is available in the separate storing means, particularly the audio module also denoted an audio voice control module, 405. The reply from telecommunication unit A (also of prestored words) is then transmitted to telecommunication unit B, 406, and the reply is analyzed in telecommunication unit B, or more precisely in the logic means included in the module if such

is used, 407. The delivery address or the requested information from A is then stored in the separate storing means, particularly the audio voice control module in telecommunication unit B, 408. The requested information is searched for in the meantime, directly after receiving the information request from A, by the telecommunication unit B, 409. This as such pre-supposes that the second telecommunication unit is provided with advanced processing capability or that it is connected to external information sources databases or computers etc. It is however not essential to the present invention exactly how this is done but what is essential for the present invention is that a conversation can be performed between two telecommunication units. When the information has been found, 410, it is automatically delivered to telecommunication unit A, 411. If however the information is not found, 410, the search is continued.

Since the whole conversation is stored, a user can then listen to it and understand it when he so desires. The requested information may e.g. relate to information in a timetable etc.

In Fig 2 a cellular telecommunication system is illustrated. In this particular case it is the GSM system although the invention of course is applicable to any other cellular system. The cellular telephone 10 (which also is denoted A as the telecommunication unit discussed earlier in the application) comprises separate storing means in the form of a module (SL) 11 which is connected to or arranged in the cellular telephone 10. The cellular telephone (here also denoted B) 20 also includes an audio voice control module 21. Still further a cellular telephone (also denoted C) 30 is illustrated. In cellular telephone C 30 however there is no audio voice control module inserted and there are also no separate storing means; in other words in this cellular

telephone the message delivery functionality is not included, e.g. the user or the subscriber has choosen not to include such a functionality. An ordinary fixed telephone (D) 40 is also illustrated for exemplifying reasons. The cellular system will not be explained thoroughly here since such are known per se. For illustrative purposes are merely the base transceiver stations BTS1 and BTS2 shown with the corresponding base station controllers BSC1 and BSC2 respectively, which base station controllers are connected to a mobile switching controller MCS1 and MSC2 respectively, each comprising a visiting location register VLR1 and VLR2 in a manner known per se. Since both cellular telephones (A) 10 and (B) 20 are provided with the message delivering functionality according to the invention, messages can be delivered in both directions which is indicated through the two-directional arrow A-B. However, the fixed telephone 40 is not provided with the message delivery functionality (although in principle it could have been). This does however not prevent the possibility of the telecommunication unit A 10 from storing and delivering a message at a preset time or at a defined or preset event to the fixed station D 40. However, there is no possibility for the fixed telephone 40 to store and deliver messages to mobile telephone A 10 or to perform a conversation between the telephones. This is illustrated through the one-directional arrow A-D.

The cellular telephone C 30 however also does not comprise this functionality. Therefore messages can only be stored in telecommunication unit A 10 for transmitting at a desired time or event to cellular telephone C 30 which is indicated through the one-directional arrow A-C. This is of course also the case for the communication between the mobile telephones B20 and C30 illustrated through the one-directional arrow B-C. This does

however not prevent a user who is available and also the phone when the message arrives, from directly returning or replying to a mobile telephone which includes the message delivering functionality according to the present invention but it merely prevents a phone-to-phone conversation for example as described with the reference to Fig 6.

The invention is of course not limited to the explicitely shown embodiments but it can be varied in a number of ways, only being limited by the scope of the appended claims.

CLAIMS

1. A mobile telecommunications unit (10;20), such as a cellular telephone or a cordless telephone, comprising a radio part (1) including receiving and transmitting means for receiving and transmitting radio signals, control means (3) including microprocessing means, signal processing means (4), communication means (5) including coding/encoding means, microphone means (7) and loudspeaker means (6), message information storing means (9) being provided for storing at least message information, the telecommunications unit (10;20) further comprising storing means (8;9;11;21) for storing address information for the destination of said message information,
c h a r a c t e r i z e d i n
means are provided for storing information about events on the destination side, i.e. on the side of the called subscriber, for activation of the transmission of said message information and logic means (9;11;21) for retrieving stored message information and for activation of the transmission of said message information to the relevant address at occurence of the relevant event on the destination side.

2. A unit according to claim 1,
c h a r a c t e r i z e d i n
that an event activating the transmission of a stored message from the mobile telecommunications unit (10;20) comprises off hook on the destination side, detection of the communication unit on the destination side being activated or that a call or call attempt is made by said destination telecommunications unit.

3. A unit according to claim 1 or 2,

c h a r a c t e r i z e d i n
that it comprises conventional storing means (8), e.g. a RAM-storage communicating with the control means (3) and in that the message storing means (9;11;21) are separate from said conventional storing means (8).

4. A unit according to claim 1,2, or 3,
c h a r a c t e r i z e d i n
that the destination address information is stored in the conventional storing means (8) or in the separate message information storing means (9;11;21).

5. A unit according to any one of claims 2-4,
c h a r a c t e r i z e d i n
that the activation event information is stored in the conventional storing means (8) or in the separate message storing means (9;11;21).

6. A unit according to any one of claims 2-5,
c h a r a c t e r i z e d i n
that the message storing means (9;11;21) and the logic means comprise a module arranged in the telecommunications unit.

7. A unit according to claim 6,
c h a r a c t e r i z e d i n
that the module is detachably arranged in the telecommunications unit and in that it comprises an audio voice control module.

8. A unit according to any one of claims 1-5,
c h a r a c t e r i z e d i n
that the separate message storing means are arranged in the telecommunications system comprising the telecommunications unit.

9. A unit according to any one of the preceding claims, characterized in that it comprises recording means for recording input audio message information.

10. A unit according to any one of the preceding claims, characterized in that it further comprises means (8;9;11;21) for storing information incoming to the receiving means from the destination telecommunications unit and in that an activation link is established between the telecommunications unit and a destination telecommunications unit.

11. A unit according to any one of the preceding claims, characterized in that the audio information is stored as audio files.

12. A unit according to any one of the preceding claims, characterized in that the stored audio information is compressed.

13. A unit according to any one of claims 1-10, characterized in that the audio message information is converted to text information and stored as text files.

14. A unit at least according to claim 6, characterized in that the logic and message storing module (9;11;21) includes the logic means and in that it further comprises voice recognition means and in that the module further comprises a memory bank of

the pre-recorded audio words and in that an audio conversation between the telecommunications unit (10) and a destination telecommunications unit (20) is stored in the storing means (11) of the module.

15. A unit according to any one of the preceding claims, characterized in that destination address information for more than one destination telecommunication unit is stored and in that one message can be delivered to more than one destination at the same time or at diferent time or at the occurrence of events which may be the same or different for different destination addresses and/or that different messages can be delivered to different addresses.

16. A mobile telecommunications unit (10;20) comprising a radio part (1) including receiving and transmitting means for receiving and transmitting radio signals, control means (3) including microprocesssing means, signal processing means (4), communication means (5) including coding/encoding means, microphone means (7) and loudspeaker means (6), message information storing means (9) being provided for storing at least message information and the telecommunications unit (10;20) further comprising storing means (8;9;11;21) for storing address information for the destination of said message information, characterized in that means are provided for storing information about time/event for activation of the transmission of said message information and in that further logic means (9;11;21) are provided for retrieving stored message information and for activation of the transmission of said message information to the relevant address at the relevant time/event and in that an activation link is established

between the telecommunications unit storing/sending the message and one or more destination telecommunication units.

17. A unit according to claim 16,
characterized in
that it comprises conventional storing means (8), e.g. a RAM-storage communicating with the control means (3) and in that the message storing means (9;11;21) are separate from said conventional storing means (8), and in that the message storing means (9;11;21) and the logic means comprises an audio voice control module being detachably arranged in the telecommunications unit or in that separate message storing means are arranged in the telecommunications system comprising the telecommunications unit.

18. A unit according to claim 16 or 17,
characterized in
that that the logic and message storing means comprises voice recognition means, a memory bank of the pre-recorded audio words is provided and in that an audio conversation between the telecommunications unit (10) and a destination telecommunications unit (20) is stored in the storing means.

19. A mobile telecommunications system comprising a number of telecommunications units (10,20,30,40), storing means for storing message information input to one or more of said telecommunications units by the user(s) of said units wherein, when a user of a first telecommunication unit (10,20) of said telecommunications units wants to deliver a message to at least one second telecommunications unit (20,30,40;10) of said telecommunications units, the message is stored in message storing means (11;21) arranged in said first telecommunications unit or in the telecommunications system,

c h a r a c t e r i z e d i n
that the telecommunication unit further comprises means for activating the transmission of said message to a second telecommunication unit (20,30,40) and in that means are provided for storing address information of said second telecommunication unit(s) and activation time/event information and in that the delivery of a message to the destination unit is controlled by events occuring on the destination side.

20. A system according to claim 19,
c h a r a c t e r i z e d i n
that the storing means for storing message information form separate storing means e.g. comprised in a separate module or similar detachably connected to the telephone.

21. A system according to claim 19 or 20,
c h a r a c t e r i z e d i n
that the separate storing means are arranged in the telecommunications system.

22. A system according to claim 20 or 21,
c h a r a c t e r i z e d i n
that the address information and/or the time/event information is stored in the module or in conventional storing means comprised in the first mobile telecommunications unit.

23. System according to any one of claim 19-22,
c h a r a c t e r i z e d i n
that the module comprises an audio voice control module and in that the message information is recorded in recording means and stored in the form of voice.

24. System according to claim 19,
c h a r a c t e r i z e d i n
that the message information is stored in the first telecommunication unit as (a) text file(s) but delivered as an audio message to the second telecommunication unit.

25. System according to anyone of claims 19-24,
c h a r a c t e r i z e d i n
that an event activating the transmission of a stored message from the first telecommunications unit comprises off hook on the destination side, detection of the communication unit on the destination side being activated or that a call (attempt) is made by said destination telecommunications unit.

26. System according to any one of claims 19-25,
c h a r a c t e r i z e d i n
that also the second telecommunication unit(s) comprises or is connected to separate storing means for storing message information and in that the separate storing means, particularly (a) module(s), comprise voice recognition means and in that an audio conversation between the first and second mobile telecommunication units is performed which is recorded and stored in at least one of the separate storing means in the first and the second telecommunication units or connecting thereto.

27. Method for sending a message from a first mobile telecommunications unit to a second telecommunications unit,
c h a r a c t e r i z e d i n
that it comprises the steps of:
- storing the message in separate storing means in the first telecommunication unit or in the telecommunications system,
- storing the address to which the message is to be delivered,

- automatically transmitting the message to the given address at occurrence of one of a number of indicated or predefined events occurring on the destination side.

28. Method according to claim 27,
c h a r a c t e r i z e d i n
that it further comprises the steps of:
- receiving a reply message from the second telecommunication unit,
- storing said reply message in the separate storing means.

29. Method according to claim 27 or 28,
c h a r a c t e r i z e d i n
that that the separate storing means are comprised in a module that is detachably connected to the first telecommunication unit.

30. Method according to anyone of claims 27-29,
c h a r a c t e r i z e d i n
that it further comprises the steps of:
- storing the address information and/or the event information in the separate storing means or in conventional or additional storing means in the first telecommunication unit.

31. Method according to anyone of claims 27-30,
c h a r a c t e r i z e d i n
that it comprises the step of storing the message information as an audio file.

32. Method according to anyone of claims 28-31,
c h a r a c t e r i z e d i n
that it comprises the steps of:
- storing pre-recorded audio words in the separate storing means,

- anylysing the pre-recorded audio words in processing means of said telecommunication unit,
- detecting delivery address for the receiving telecommunication unit,
- performing a conversation using said pre-recorded audio words between the first and second telecommunication units, and
- storing said conversation between the first and the second telecommunications unit.

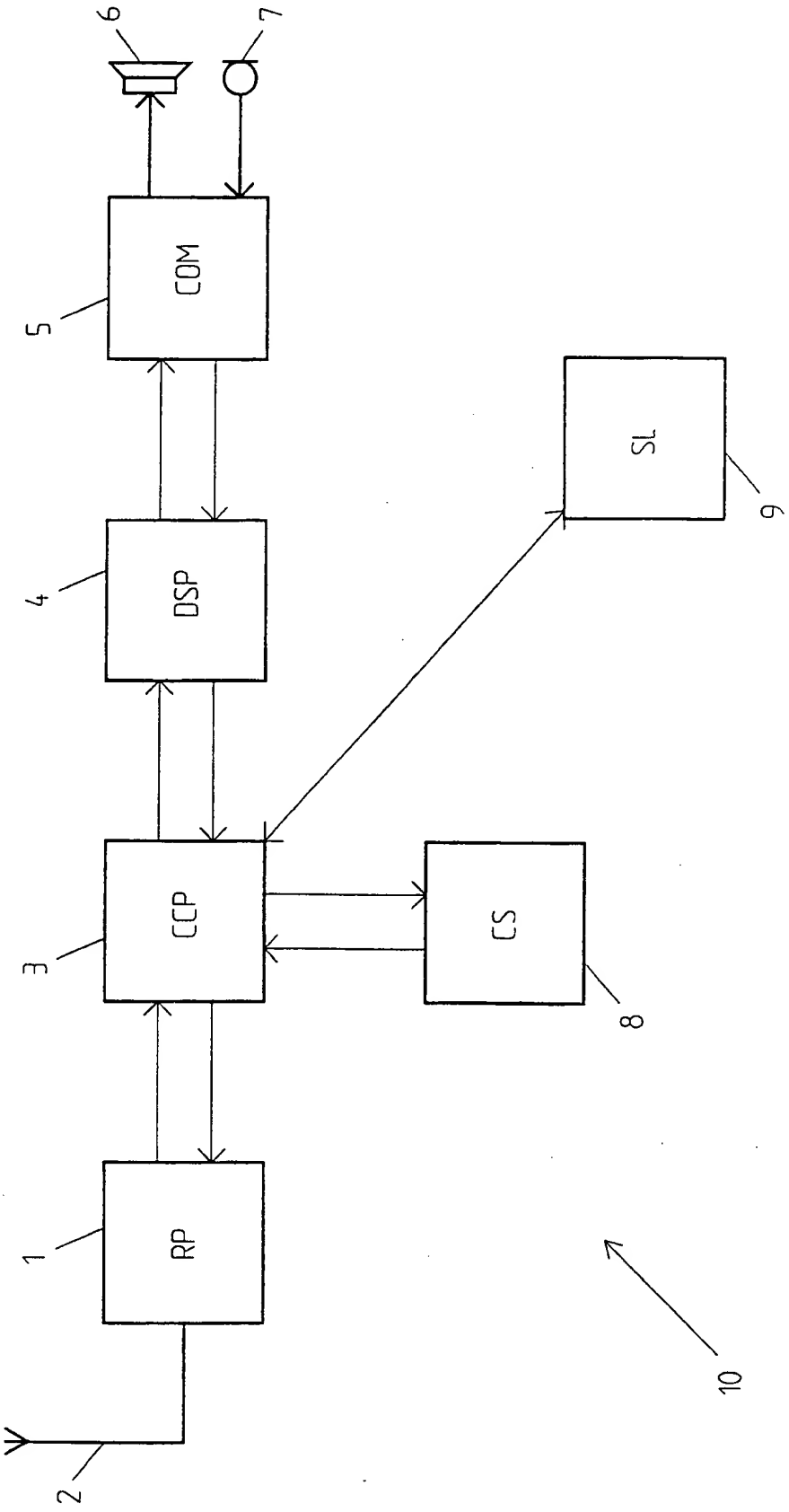


FIG. 1

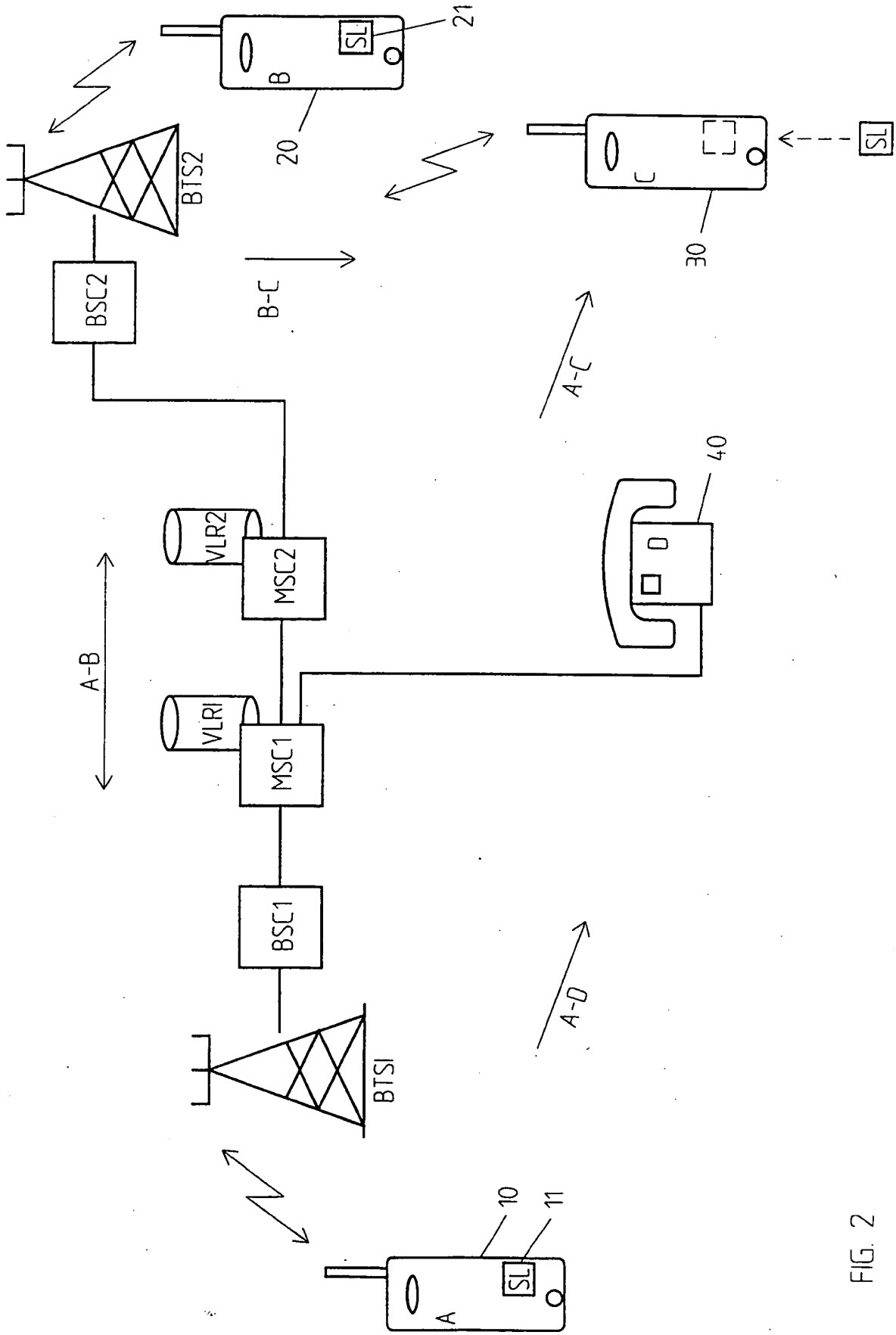

SL
21
B
20
BTS2
BSC2
B-C
C
SL
30
A-C
40
D
VLR2
MSC2
A-B
VLRI
MSC1
BSC1
A-D
BTSI
10
11
SL
A

FIG. 2

FIG. 3

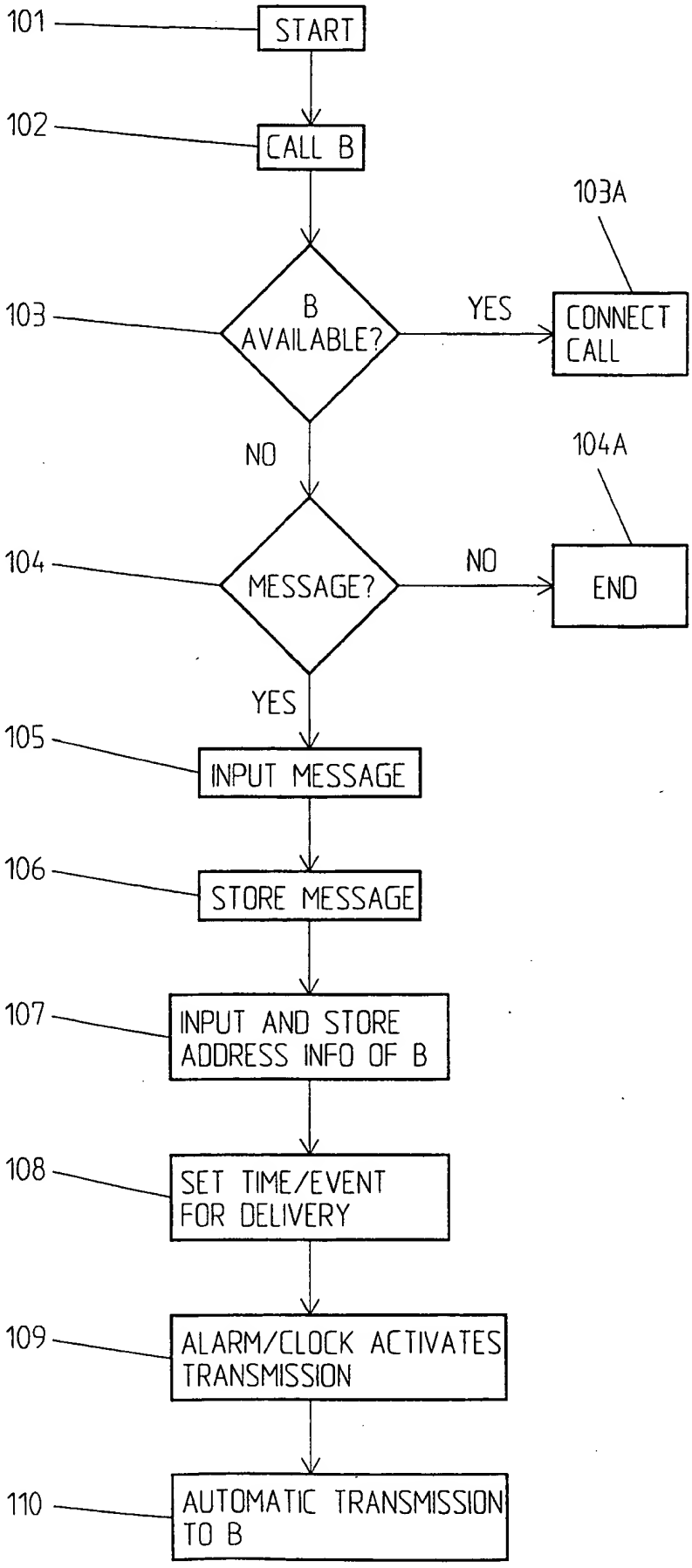

101
START
102
CALL B
103A
103
B AVAILABLE?
YES
CONNECT CALL
NO
104A
104
MESSAGE?
NO
END
YES
105
INPUT MESSAGE
106
STORE MESSAGE
107
INPUT AND STORE ADDRESS INFO OF B
108
SET TIME/EVENT FOR DELIVERY
109
ALARM/CLOCK ACTIVATES TRANSMISSION
110
AUTOMATIC TRANSMISSION TO B

FIG. 4

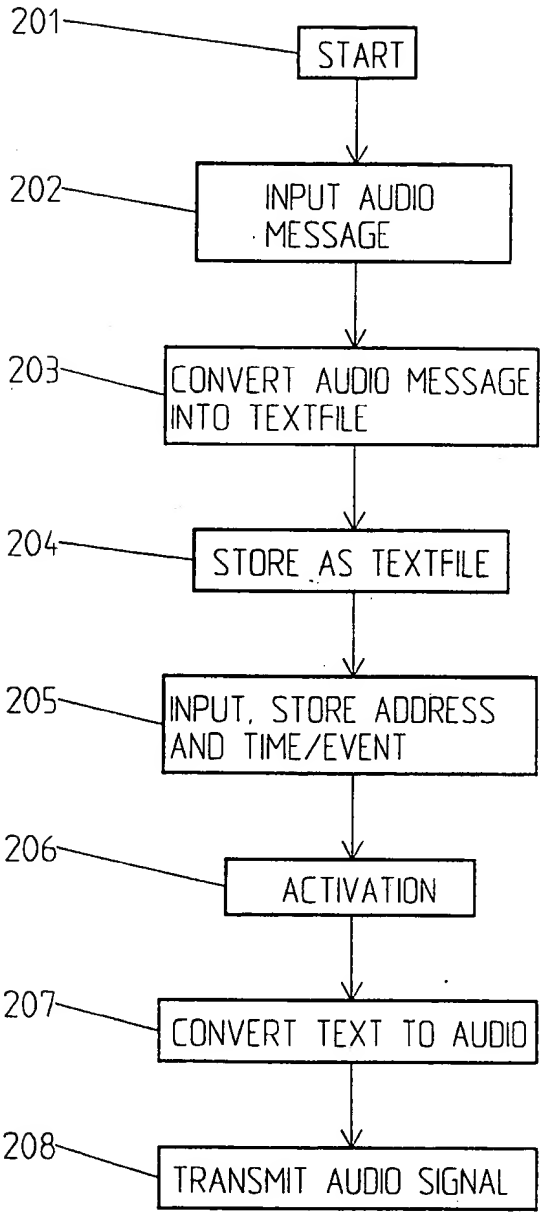
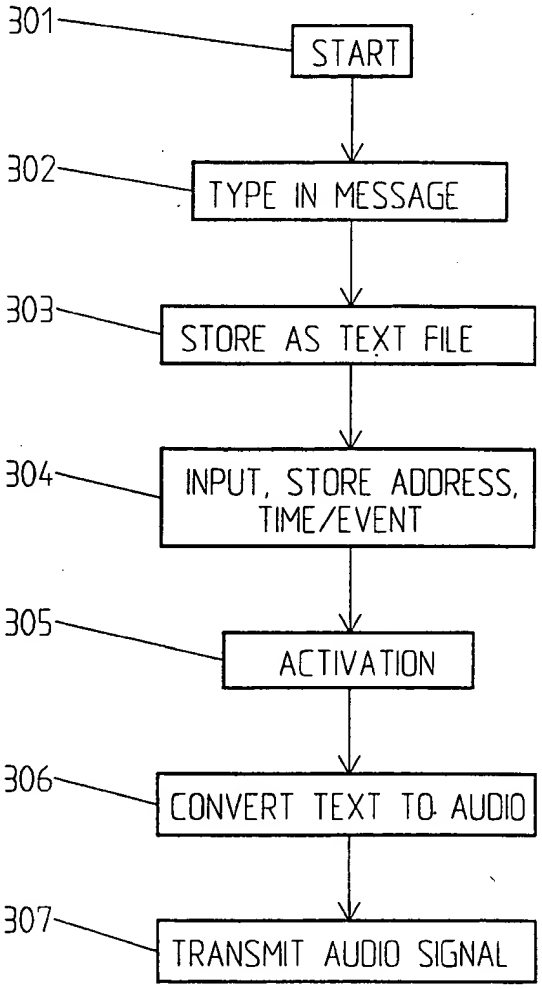

201
START
202
INPUT AUDIO MESSAGE
203
CONVERT AUDIO MESSAGE INTO TEXTFILE
204
STORE AS TEXTFILE
205
INPUT, STORE ADDRESS AND TIME/EVENT
206
ACTIVATION
207
CONVERT TEXT TO AUDIO
208
TRANSMIT AUDIO SIGNAL

FIG. 5


301
START
302
TYPE IN MESSAGE
303
STORE AS TEXT FILE
304
INPUT, STORE ADDRESS, TIME/EVENT
305
ACTIVATION
306
CONVERT TEXT TO AUDIO
307
TRANSMIT AUDIO SIGNAL

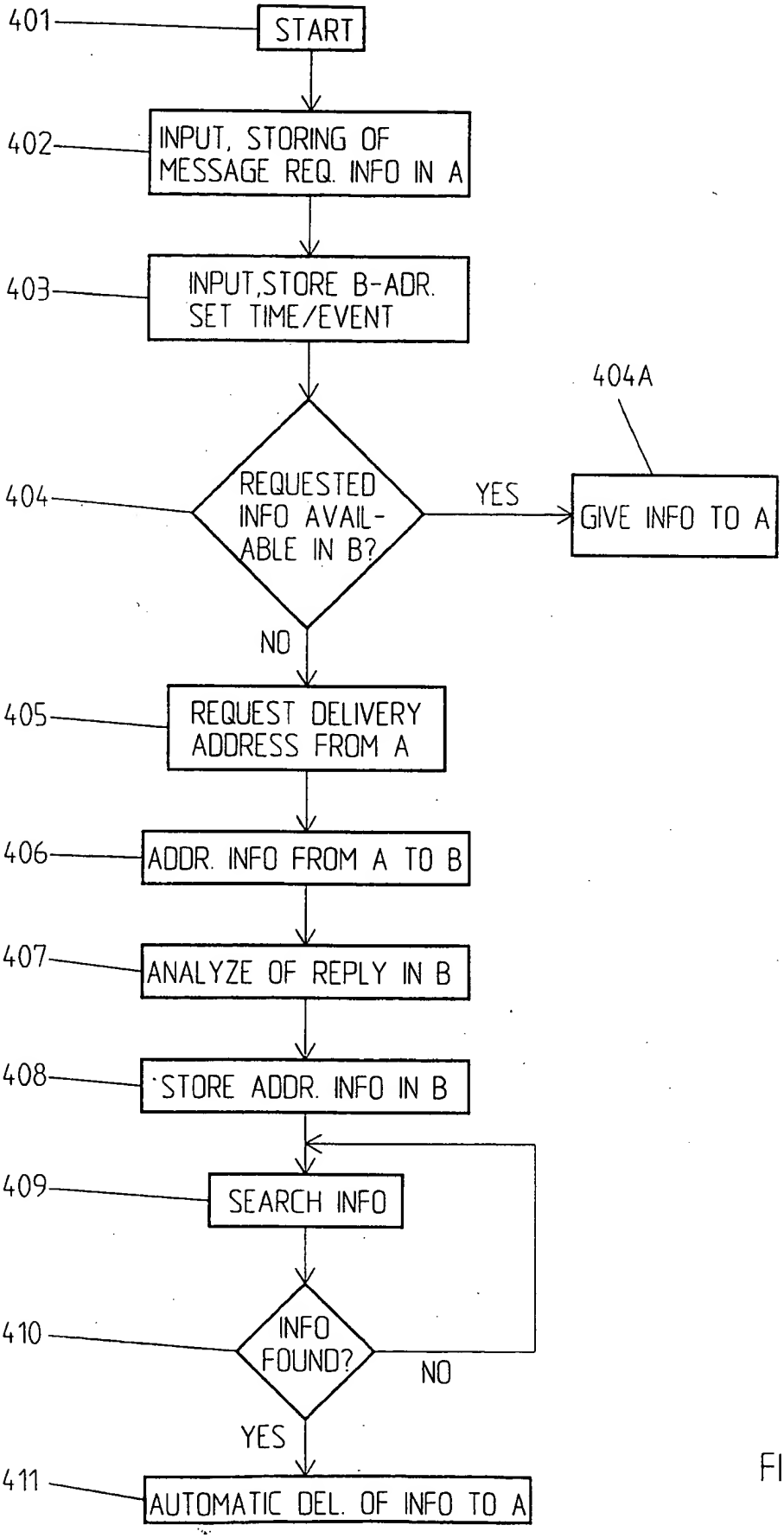

401
START
402
INPUT, STORING OF MESSAGE REQ. INFO IN A
403
INPUT,STORE B-ADR. SET TIME/EVENT
404A
404
REQUESTED INFO AVAIL-ABLE IN B?
YES
GIVE INFO TO A
NO
405
REQUEST DELIVERY ADDRESS FROM A
406
ADDR. INFO FROM A TO B
407
ANALYZE OF REPLY IN B
408
STORE ADDR. INFO IN B
409
SEARCH INFO
410
INFO FOUND?
NO
YES
411
AUTOMATIC DEL. OF INFO TO A

FIG. 6